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Executive Development

Establishing a Logical Basis for Minimum Staffing of Fire Apparatus for the Lumberton Fire Department

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CERTIFICATION STATEMENT

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used this language, idea, expression, or writings of another.

Signed: _____

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Abstract

The Lumberton Fire Department (LFD) had no logical basis for establishing crew size on fire apparatus, which may increase the risk of firefighter injury at a structure fire. Evaluative research was conducted to establish a basis for minimum staffing.

Research questions answered were (a) Is there a national standard for crew size on fire apparatus? (b) Does the Lumberton Fire Department meet the standard? (c) Do other same or similar size fire departments meet the standard? (d) What are the projected costs for meeting the standard? (e) What are the benefits for meeting the standard?

Research procedures included surveying and interviewing random fire departments, elected officials, and the National League of Cities (NLC), a database search by the National Fire Academy (NFA) Learning Resource Center (LRC), reviews of the Occupational Safety and Heath Administration (OSHA) requirements, reviews of the National Fire Protection Association (NFPA), National Institute of Occupational Safety and Health (NIOSH), Fire Protection Handbook (FPH) recommendations, and reviews of Firehouse, Fire Engineering, and Fire Command magazines.

Results indicated a standard recommendation of 4 firefighters per fire engine. Comparative survey results indicated most fire departments staff 3. The most common rationale for staffing was budget restraints. Others indicated NFPA Standards, enhanced task force staffing, the union, and city policies. The survey illustrated life safety as the most beneficial factor of minimum staffing.

Recommendations included better education of elected officials, future application for the Staffing for Adequate Fire and Emergency Response (SAFER) grant, increase volunteer recruitment, and the closing of one fire station to redistribute personnel.

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Introduction

Although private businesses and municipalities are diverse in many ways, they also hold similarities. Consider McDonald's. In his book, *McDonald's: Behind the Arches* (1986), John F. Love asserts, "McDonald's is the closest thing America has to a retailing utility" (p 3.) This statement simply means the general public has come to expect the quality product and service provided by McDonald's, but its corporate needs generally go unnoticed. Likewise, a municipal service facilitates the basic necessities of life or enhances the standard of living for its citizens to various degrees. In the Fire Protection section of Municipal Government in North Carolina (1995), Ben F. Loeb, Jr. and Sherman Pickard state, "THE BASIC fire service confronting city officials today is how to provide an acceptable level of service at an affordable cost" (p. 649). Citizens expect a quality service, but give little thought to what it takes to provide it.

Local government is not a private business, but it shares some of the same general philosophies. It provides services for its customers through its employees. According to Becky Maynor, finance director for the City of Lumberton, "The largest difference in private business and local government may be the equation *revenue, minus expenditures, equals fund balance"* [italics added], (B. Maynor, personal communication, August 16, 2005). Local officials must be accountable for spending the revenue generated from their constituents on the necessities of the service provided by local government employees.

The fire service provided by a local government is a prime example of balancing cost, need, and benefit. In conjunction with the cost of firefighter salaries and benefits, Loeb and Pickard (1995) surmise, "… the cost of mandates under the Occupational Safety and Health Act, and the rising cost of fire apparatus and fire stations, city officials face the task of finding the revenues to support an acceptable level of fire service" (p. 650). The local government must prioritize

spending within the various departments to ensure its citizens are receiving a quality service as efficiently and affordable as possible.

For example, the fire service and municipal leaders have debated the appropriate number of firefighters needed to staff fire engines and attack structure fires for years. Municipal leaders and governing bodies have voiced their support of safe fire ground operations, but expect the fire service to continue to do more with less. In contrast, the fire service has had to defend the argument that more firefighters are needed to fight a lesser number of actual working fires because of more dangerous materials and the need to provide safer working conditions. The deliberation between the two bodies has become a game of dollars and *sense*.

The problem is that the Lumberton Fire Department (LFD) currently has no logical basis for establishing crew size on fire apparatus, which may increase the risk of firefighter injury at a structure fire. Currently, there are two personnel assigned to each first response engine company and two personnel assigned to a ladder company. The purpose of this research is to establish rationale for minimum staffing of fire apparatus at the LFD. The information gathered will be used to determine if there is a minimum staffing standard to which LFD needs to comply and the actual costs and benefits of establishing a recommended minimum level of staffing on fire apparatus.

The following research questions were used to conduct applicable research into this problem.

1. Is there a national standard for crew size on fire apparatus?
2. Does the Lumberton Fire Department meet the standard?
3. Do other same or similar size fire departments meet the standard?
4. What are the projected costs for meeting the standard?
5. What are the benefits for meeting the standard?

The evaluative research method was used to assess the standard for crew size on fire apparatus. The feedback data collected relates to minimum staffing from statistical resources such as an electronically conducted survey, manuals and publications, and personal interviews. The data collected is representative of regional, state, and national statistics.

Background and Significance

The City of Lumberton is located in southeastern North Carolina, within the county of Robeson. It is an urban area surrounded by a very rural and economically disadvantaged county. LFD was organized as a volunteer organization with 30 members in 1895. Its first organized fire company, under a paid fire chief, was established in 1903. Currently, it is a combination fire department with 54 fulltime employees and five volunteers.

According to the City website, the mission of the LFD is to "… protect the lives and property of the inhabitants of Lumberton from the adverse effect of fire, medical emergencies, or exposure to dangerous conditions created by either man or nature" (LFD mission statement, n.d.). The department has always tried to provide the highest-level fire service possible. As the city has annexed and grown over the past 35 years, fire stations were built and new equipment was bought, but adequate staffing needs were always neglected due to the high cost of personnel salaries and benefits. Existing career firefighters were reassigned to the new stations and engine company staffing dwindled from four persons to two. As years continued to pass, volunteerism also diminished. The practice of responding two-person engine companies to structure fires may interfere with LFD achieving its organizational mission statement.

The fire department's revenue comes from the city's general fund, where it shares the coffers with 11 other city departments. Of course, each department considers its individual needs

priority and lobbies for precedence in support of their division. As the fire service evolves and requires change, LFD attempts to progress, but is limited by the financial constraints of the city. . Previous fire chiefs have addressed their concern of inadequate staffing with city leaders and have officially requested additional personnel on an annual basis. Although the city council and other city administrators have acknowledged the chiefs' concerns, they refer to the dwindling number of actual working structure fires and the lack of additional revenue sources as a dilemma in increasing staffing. Basically, the previous fire chiefs have been advised to continue status quo, unless they could show where lives and property were lost due to an insufficient number of firefighters.

LFD currently serves 15 square miles of urban area from four stations strategically located throughout the city. The central fire station contains one engine, one ladder, and a non-transport, emergency medical response vehicle, used as a squad. Each apparatus is staffed 24 hours per day with two career employees. The battalion chief is also assigned to the central fire station and responds to all alarms in a vehicle outfitted with additional firefighting tools and equipment. The three outlying substations are equipped with one engine staffed by one fire captain and one firefighter. Each fire alarm initially elicits three engines, one ladder, and the battalion vehicle. This arrangement places nine people on the fire scene within four minutes, 90% of the time. If additional assistance is needed, one or all of the remaining engine companies are dispatched, as well as four administration officers, five LFD volunteers, and one off duty shift. A mutual aid agreement with four volunteer fire departments dispatches additional firefighters to the fire scene or allows fill-ins at empty fire stations. In this situation, LFD has the capability of placing a minimum of 15 firefighters on the scene of a residential structure fire within 15 minutes or more than 22 firefighters on the scene in 20 minutes or less, 90% of the time.

If the past and current practice of neglecting the need for adequate staffing to safely perform fire ground operations continues, LFD and other fire service agencies may be placing the lives of their firefighters in danger. This raises the concern of whether employees are placed at a higher risk for life threatening injury by responding to structure fires with two-person engine companies. An objective of this research is "to prepare the executive fire officer for his or her role as a change agent" (Executive Development [ED] Self-Study Guide [SSG], 2004, p. 3-1). This research is in response to a current procedure used by LFD for responding to structure fires. According to the United States Fire Administration's (USFA) website, this procedure could be a failure to achieve one of its five operational goals, which is "… reducing by 25 percent the loss of life of firefighters" (2002, ¶4).

This research will examine the practices of other fire departments throughout the state and nation to determine their rationale for staffing. This information may propose data or other facts that will guide LFD and the City of Lumberton to a decision for change or to maintain status quo.

Literature Review

The United States Department of Labor's (US DOL) Occupational Safety and Health Administration (OSHA) is a federal organization established to ensure a safe and healthy work environment for employees. OSHA creates and enforces a code of federal regulations (CFR) designed to guide employers in providing a protected work environment for employees. Specifically, OSHA 29 CFR 1910.134, *Respiratory Protection Standard*, mandates the use of respirators. This rule also addresses the requirements of employees entering atmospheres that are immediately dangerous to life and health (IDLH). Firefighters that are performing structural firefighting and required to wear self-contained breathing apparatus are explicitly named in

section g, part 4 of 29 CFR 1920.134. The regulation requires they must implement "… a protective practice known as '2-in/2-out'" (U.S. Department of Labor, 2004). The practice utilizes two firefighters making an interior attack within the IDLH atmosphere, while two firefighters are located on the outside of the IDLH atmosphere. With this requirement in place, OSHA imposes the need for four fire fighters to be on the scene of a structure fire when interior firefighting is taking place.

The National Fire Protection Association (NFPA) is a nonprofit group comprised of individuals and organizations. A part of their mission is to explore and propose national standards for fire training, education, and equipment for the benefit of fire departments. The standards suggested by the NFPA for adoption by the fire service are numbered and titled. For example, NFPA 1710 (2004), *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments* suggests engine companies "… be staffed with a minimum of four on-duty personnel" (5.2.2.1.1). The main rationale for this standard is to provide for safety and effectiveness of the firefighting forces.

NFPA 1720 [*Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments*, suggests that fire apparatus not equipped with seated positions for four firefighters "…respond with an additional vehicle(s) [i.e., personnel-owned vehicles (POVs)], in concert with the initial arriving engine to carry additional personnel. This response would ensure that a minimum of four personnel are assigned to and deployed as a company" (A.3.3.4).

The NFPA Fire Protection Handbook (FPH) is an industry recognized source of information. It encompasses many areas of practical knowledge to be used for informed decision-making by

fire service leaders. The FPH suggests authorities examine the local fire potential and the likelihood of deploying firefighters to combat structural fires. Staffing of fire apparatus should be based on that data. According to the FPH (2003), "It is a policy of many fire departments not to operate engine or ladder companies with fewer than four firefighters, including an officer, on duty" (p. 23).

An Internet article written by Bob Hoffman (2001) titled, "*When is it Time to Hire More Employees?*" discusses ways to identify when an organization may be understaffed. He cites declining economy and increased profit margins as familiar culprits for maintaining a too lean workforce. He also suggests that hearing complaints from employees concerning working conditions is often an indicator of a staffing problem. These same controls affect the staffing of emergency services, as well.

The former fire chief of LFD, Ted E. Melvin, addressed a letter to the city manager concerning inadequate staffing levels. Melvin identified a decline in staffing from 23.5 personnel assigned to each of the two fire stations in 1978 to 12.5 personnel assigned to each of the four fire stations in 1989. The City of Lumberton added two stations over an 11-year period to address annexations, but failed to add personnel to adequately staff additional apparatus.

In his letter, Melvin explained, "the most general fire service practice is to staff engines with a four-person company. No other fire department in the state staffs two-person engine companies" (T.E. Melvin, Personal Communication, March 1989).

The National Institute for Occupational Safety and Health (NIOSH) is a federally sponsored entity operating through the Department of Health and Human Service's Center for Disease Control. The department is responsible for providing research, training, and education on safe and healthy work practices to all labor forces throughout the nation. NIOSH investigates

occupational accidents and deaths and the principal conditions instigating them. Upon the completion of its investigation, NIOSH publishes reports of the findings and offers recommendations to prevent future occurrences of similar incidents.

NIOSH investigated the death of LFD Firefighter Thomas Earl Brooks in August 2002. While on duty in January 2002, Brooks died in his sleep of a heart attack after responding to several emergency calls and participating in strenuous training during the day. The NIOSH F2002-33 Fire Fighter Fatality Investigation Report determined LFD needed to "… provide adequate firefighter staffing to ensure safe operating conditions" (2002, p. 2). Although it is stated in the report that the judgment of inadequate firefighter staffing did not contribute to Brooks' death, it cites the NFPA 1710 and 1500 [Standard on Fire Department Occupational Safety and Health Program] Standards as its recommendation for minimum staffing of fire engines due to the labor intensive duties of firefighting. The recommendation proclaims:

> Understaffing causes those members on-scene to work harder for longer periods of time. Additionally, it requires the use of extra fire companies in order to meet the demand for manpower. Engine and Ladder Companies should be staffed with four personnel at a minimum. (p. 17)

Danica Coto reported in the Charlotte Observer, that firefighters of the Gastonia Fire Department, located in central North Carolina, retained a lawyer to protest their current pay scale, which they alleged had caused personnel to quit the department, leaving fire stations understaffed. According to their Fire Department website (2005), Gastonia fire fighters protect a population of more than 60,000 from eight fire stations and have a total staffing level of 135 fulltime employees. Coto quotes City Manager, Ed Munn, as saying, "'It's always been a

problem' … 'If we could, we would like to have four on every route', he said, 'It would provide a better service. Can we afford it? That's the question.'" (2005, p. 71)

Harry R. Carter is a columnist for the trade journal Fire House Magazine. Carter reports on issues affecting the fire service. He has written several articles on the staffing of fire trucks from the perspective of a career fire officer in Newark, New Jersey and as a rural volunteer fire officer. From both perspectives, Carter insists the need for minimum staffing, as proposed by NFPA 1710, is a fair and reasonable request from fire chiefs. In his article, *Staffing – It's All about People*, Carter declares, "One need only look back to the Keokuk tragedy of 1999 to see the dangers of sending an understaffed response to an emergency incident" (2001, p. 1). Carter's comments refer to a residential structure fire in December 1999 that claimed the lives of three Keokuk, Iowa firefighters and three children. Carter claims that the International City Manager's Association and the League of Cities are two organizations actively opposing NFPA 1710. Carter declares, "It is easy to see why the two groups listed above might protest the standard that specifies response times and staffing levels. They might actually have to hire enough fire personnel to staff a safe operation" (2001, p. 2).

An article titled "*Roundtable Two-In/Two-Out Rule*" was discovered on the Fire Engineering website. According to John (Skip) Coleman, deputy chief of operations for Toledo Ohio Department of Fire and Rescue, "Meeting this requirement is not a problem, since the Collective Bargaining Agreement establishes a minimum staffing provision of four firefighters per engine company (2000). Other fire departments indicating constant minimum staffing of fire engines included Phoenix, New York, and Seattle.

According to a Government Accountability Office (GAO) report (2005), "the Army plans to reorganize its 10 active divisions, expanding from 33 brigades to 43 modular combat teams…"

(p. 3). With the need to spread the Army to many fronts in the war against terrorism and the need to maintain a high level of homeland security, the Army needs to do more with the troops it has. They will basically retain the same total number of troops, but by adding specialized components such as intelligence, support units, and expert technology to smaller brigades, they will be much more mobile, while maintaining their combat effectiveness. The cost of converting the entire regular Army and all reserve units, including the National Guard and Army Reserves, will exceed $48 billion.

The School of Government, located at the University of North Carolina at Chapel Hill, hosts a Municipal and County Administration course designed to educate city and county administrators, as well as elected officials, on the integral operations within local government. The Municipal Government in North Carolina course book identifies the General Statutes in which a city is authorized to provide fire protection. It states, “These statutes allow, but do not require, a city to provide fire protection” (Loeb & Pickard, 1995, p. 653). The book places general emphasis on the importance of fire protection without offering specific criteria for determining the level of protection

As a part of the Assistance to Firefighters Grant (AFG), the United States Department of Homeland Security (DHS) recognized a need to provide federal grant monies through the Office for Domestic Preparedness (ODP) to assist disadvantaged fire departments with meeting minimum staffing levels. These fire departments may be career, volunteer, or combination fire departments. The Program Guidance packet for Staffing for Adequate Fire and Emergency Response (SAFER) Grant (2005) indicates that $65 million was approved for the 2005-06 fiscal year (p. 4). The purpose of the grant is to provide assistance to recipients in acquiring additional firefighters to meet the NPFA minimum staffing standards 1710 and 1720. The grant program’s

two main goals are to help career departments with hiring additional firefighters and volunteer departments with recruitment and retention (p. 1).

Hiring firefighters is a five-year commitment, with the federal government bearing a percentage of the cost initially and decreasing their contribution as the five years wane. The first year requires a 10% match by the department and each consecutive year calls for a 20%, 50%, and 70% match, respectively. The fifth and final year of the grant process calls for the governing body to provide 100% of the cost of the additional firefighters. The recruitment and retention grant monies do not have a local match. A volunteer fire department can use these monies to recruit firefighters and provide incentives or programs for retaining them.

Insurance Services Office (ISO) is an organization that gathers information concerning risk and performance in many areas of private industries and government. One area under the evaluation of ISO is the fire service capabilities in individual communities. According to ISO (2005), the Fire Suppression Rating Schedule (FSRS) is the manual used to measure the major elements of a community's fire suppression system. Information concerning water supply, communications, and the fire department are combined to develop a numerical grade called a Public Protection Classification (PPC). A classification of 1-10 is assigned based on the results of the survey. Class 1 is the best rating and Class 10 is basically an indication of no fire protection. The ISO PPC is used by the insurance industry to determine insurance premiums for properties within the community.

Thirty percent of the fire department's points (15 of 50) comes from the credit given for the average number of firefighters and company officers available to respond to structure fires. ISO does not make a requirement for minimum staffing, but an organization is credited with the most points for the greater number of firefighters assigned to each unit.

John T. O'Hagan and Associates conducted a study known as the *Dallas Fire Department Staffing Level Survey*. O'Hagan (1985) explains his process and results in an article published in Fire Command magazine (pp. 18-21). This particular assessment might be considered the most noteworthy even though it was conducted over twenty-one years ago in Dallas, Texas. The evaluation focused on the ability and speed of the fire department to combat fires in three types of structures with three, four, and five person engine companies. The conditions were structured to involve standard fire ground operations and practices recognized by most of the firefighting community. The study revealed all test groups could eventually accomplish the tasks, but time, fatigue, and efficiency were all major factors. The results determined a four-person engine company was the minimum necessary to safely and effectively perform initial fire ground operations. It concluded that losses were more likely with a crew of less than four due to the burden of performing numerous labor-intensive assignments.

Literature review revealed nationally recognized sources, indicated a minimum of four firefighters on an engine company to respond to all structural fires in order to conduct a safe and efficient fire ground operation.

Procedures

Determining which of the current problems, within the LFD requiring immediate attention, was the initial step. Question 5, on the annual evaluation (Appendix A) of all LFD personnel, is "List any changes that you feel would be beneficial to the City and to its employee in your department/division operations" (Appendix A). This question was chosen by the author to evaluate what the majority of LFD personnel felt was an area of weakness within the organization. Beginning in August 2005, 48 evaluations (100%) were reviewed for the fiscal year 2004-2005. Evaluations from the previous year were used to obtain honest opinions of all

LFD suppression employees without tainting the process with a direct inquiry from the author. After deciding upon the area of weakness, questions to be addressed in the ARP were formulated in September 2005.

The next step in the procedure process was to determine the parties with interests in minimum staffing. The author determined fire departments would hold a favorable interest in minimum staffing requirements, while local government administrators, elected officials, boards of directors, and the National League of Cities (NLC) might hold contrasting views of minimum staffing. A request was made of the Learning Resource Center (LRC), located at the National Fire Academy (NFA), to conduct a database search on the topics of *engine companie*s, *manning*, and *wages and salaries*, in September 2005. There were 311 records of related information reported on these topics. Included were previous ARPs submitted by other Executive Fire Officer (EFO) students, articles from electronic publications and periodicals, such as *Firehouse*, *Journal of Emergency Medical Services (JEMS), Fire Engineering, Journal of Homeland Security*, *Fire Chief, Fire-Rescue* and *International Firefighter*. Other research materials included fire service books and nationally accepted procedures and standards, such as the 19th edition of the FPH, NFPA Standards 1500, 1710, and 1720, and NIOSH reports.

Following the database search request from the NFA LRC, the author constructed a 20-question survey (Appendix B) consisting of 16 multiple-choice and 4 fill in the blank questions to be randomly distributed to career, volunteer, and combination fire department administrators. The purpose of the survey was to determine staffing conditions for comparable fire departments throughout the United States. An instructional cover letter accompanied the survey. The author developed five email distribution lists to dispense the surveys on October 1-4, 2005. The lists were developed by using class rosters from four diverse groups of students participating in NFA

classes from 2003 to 2005 and one class to attend in 2006. They included 111 individuals dispersed throughout the United States. The NFA classes consisted of Leading Community Risk Reduction (2006), Executive Development (2005), Executive Planning (2004), and Fire Service Financial Management (2003). The email distribution list created by the North Carolina Association of Fire Chiefs, *ncfirechiefs@yahoogroups.com*, was also used to conduct the survey. This distribution list contained 397 career, volunteer, and combination fire service organizations in North Carolina.

Of the 508 surveys dispersed, the author received 34 responses by November 12, 2005. Another email request was resent to members of all the distribution lists to solicit more responses on November 15, 2005. The author received an email from a respondent in San Marcus, Texas recommending placing the survey in the Friday Report on the Texas Fire Chiefs Website. The author emailed James Gaskin, of the Texas Fire Chiefs Association, to request the survey be placed in the report. The second request for responses and placing the survey on the Texas Fire Chief's Association website yielded an additional 92 responses for a total of 126 responses from 21 states and the country of New Zealand. The information collected and an analysis of frequency was used to compare answers from all fire departments surveyed. From this analysis, another study of frequency was conducted for comparable size fire departments with LFD, based on population.

Upon completion and distribution of the fire service surveys, a similar survey consisting of 13 questions was developed for elected officials and governing bodies (Appendix C) to determine their position on minimum staffing. A copy of the survey, along with an instructional cover letter, was emailed to each of the previously developed lists. Recipients were asked to circulate the survey to their respective elected officials or board members. Zero responses were returned

from this distribution method. A copy of this survey was also distributed to the eight members of the Lumberton City Council and one to the Mayor in November 2005. Three of the nine surveys were returned. A second request for a response in December 2005 yielded no additional returns.

In November 2005, the author conducted a personal telephone interview with Katherine Bates, Federal Relations Policy Manager with the National League of Cities (NLC) in Washington, D.C. Bates is also a representative for the NLC on the Public Safety and Crime Prevention (PSCP) committee. She described the committee duties as being responsible for determining national municipal policy in the areas of crime prevention, corrections, substance abuse, municipal fire policy, juvenile justice, disaster preparedness and relief, homeland security, domestic terrorism, court systems and gun control. Bates was asked the position of the NLC on minimum staffing standards for fire engines (Appendix D).

Also during the month of November 2005, the author tried to elicit a response from Andrew Romanet, an attorney for the North Carolina League of Municipalities (NCLM), for a statement confirming the NCLM's position on the minimum staffing of fire engines. Mr. Romanet did not return a reply.

In December 2005, 40 copies of the Elected Official Survey were passed out to steering committee members at the NLC PSCP meeting in Charlotte, North Carolina by committee member and Lumberton City Councilman Erich Von Hackney. According to Hackney, the PSCP Committee consists of elected commissioners, council members, and mayors from various states across the nation (E. Hackney, personal communications, December 1, 2005). Each member of the steering committee was asked to complete the survey and return it to Councilman Hackney prior to leaving. Mr. Hackney returned 31 (77.5%) completed surveys for computation on December 15, 2005.

Of the approximate 557 surveys distributed to all elected officials and local government administrators, a total of 34 (6.10%) were returned. The information collected and an analysis of frequency was used to record the results from each respondent.

The final step in the procedures process was to determine the cost of meeting the minimum firefighter per engine company standard. The formula the author used for this determination was the number of fire engines, times the minimum number of fulltime equivalents (FTEs) per fire engine, plus the number of FTEs per squad, plus the battalion chief. The result of this equation was the total minimum number of FTEs needed for each of the three battalions. The minimum number of FTEs per battalion was then multiplied by the number of battalions to determine the total number of FTEs needed for the operation of the suppression division.

The next step in the formula was to identify all annual benefit time allowed for sick, vacation, holiday, and education leave time. This sum was multiplied by the total minimum number of FTEs needed for the operation of the fire suppression division to determine the current amount of benefit time available to be taken by all employees. The current benefit time divided by the total number of work hours per year, determined the additional FTEs needed to cover for benefit time. The benefit time FTEs were added to the minimum number of FTEs needed for the operation of the suppression division, to determine the total minimum number of FTEs needed to staff fire engines The sum of the current FTEs on the LFD roster was subtracted from the total minimum number of FTEs needed to staff fire engines to determine the additional FTEs the city needed to hire to meet a minimum staffing of four firefighters per fire engine.

Once the total number of additional FTEs needed was known, information regarding salary, benefits, and associated costs were obtained from the City of Lumberton Human Resources Department (C. Buie, personal communication, November 30, 2005). A percentile of the base

salary was used to determine the cost of unemployment tax, Social Security Tax, Worker's Compensation, and retirement. These totals were added to the cost of health insurance, uniforms, and personal protective equipment to determine the total annual cost per FTE hired.

Results

The author's survey results indicated four of the 22 (18.2%) respondents have adopted the NFPA Standards as their decree for minimum crew size on fire apparatus (Appendix E #14.) Sixteen respondents (77.2%), including LFD, indicated that they have not adopted NFPA standards for determining minimum staffing (Appendix E #14). Many departments from the overall results use a combination of NFPA Standards and OSHA 1910.134.Six fire departments in Texas indicated the use of a concept known as Enhanced Task Force Staffing (Appendix F #16). According Fire Chief Mike Baker, of San Marcus, Texas, this practice follows NFPA 1710 5.2.3.2.2, which calls for a minimum of 11 to12 personnel on the fire ground within eight minutes, 90% of the time, to conduct fire suppression operations. Although they may not have officially adopted NFPA, this ideology allows the department flexibility in staffing other apparatus and conducting daily operations (M. Baker, personal Communication, January 9, 2006). Rationales, other than NFPA Standards were used to determine minimum staffing by the remaining respondents. These factors included the union (4.5%), city policies (4.5%), and the most common rationale (31.8%), including LFD, was budget restraints (Appendix E #16).

Beginning in August 2005, 48 evaluations (100%) were reviewed for the fiscal year 2004-2005. LFD evaluations from the previous year revealed 44 of the 48 evaluations (91.6%) felt the need for additional staffing to assist with basic fire ground operations. The City of Lumberton has not adopted NFPA Standards as an operating policy and is not required by any other local, state, or federal agency to comply with minimum staffing.

Results from the elected officials surveyed (48.6%), indicated a desire to staff fire equipment with an adequate number of personnel to safely and effectively function on the fire ground (Appendix G #9). Budget constraints and economic depression dictates the level of service the municipality can afford (Appendix G #11). The elected officials that completed the survey indicated that on a scale of 1 to 6, fire protection is typically a level 2 or 3 priority (77.2). The majority of elected officials (57.1%) also indicated they felt educated on minimum staffing and its meaning, while 11 of 35 (31.4%) felt *somewhat* educated (Appendix G #8).

Besides LFD, 21 of the 126 random surveys returned (16.7%), chose 18,000 to 29,999 as the population of their jurisdictions (Appendix F #3). Comparisons to engine company staffing, rationale for staffing, operating budget for salaries and overtime, number of engines responding on initial alarms, additional apparatus dispatched for fire ground operations, the knowledge level of governing bodies concerning staffing, as well as benefits and difficulties associated with minimum staffing were compared with LFD using these 21 fire service agencies.

The comparative survey results indicate that one (4.5%) respond with one personnel; four (18.2%) respond with two personnel; 12 (54.5%) respond with three personnel; and four (18.2%) respond with the recommended number of four personnel for minimum staffing (Appendix E #10). Four of the fire departments (18.2%) contrasted with LFD, have officially adopted NFPA standards and four departments (18.2%) negotiate with a union (Appendix E #14 & #5).

On December 13, 2005, the author received an unsolicited telephone call from the Honorable Shirley Lasseter, Mayor of Duluth, Georgia. Mayor Lasseter also holds the distinction of working as the Director of Public Education for the Georgia Office of the State Fire Marshal in Atlanta. As an elected official, Mayor Lasseter is a member of the policy committee for the NLC PSCP. In the telephone interview, she stated her desire to support the minimum staffing of four

firefighters on fire engines and is actively seeking a vehicle for promoting it on a national level. Mayor Lasseter indicated that she was working hard to promote minimum staffing throughout the state of Georgia. Lasseter stated. “Many fire departments in my state do not meet the minimum staffing standard” (S. Lasseter, personal communications, December 13, 2005).

Of the comparative fire departments surveyed, 36.3%, including LFD, have an annual operating budget of between $2,000,000 and $2,999,999 for salaries and benefits. Also, 60%, including LFD, spend between 1-5% of the operating budget on overtime to maintain their department’s minimum staffing level (Appendix E #6 & #7). The survey results also depict cost as the major difficulty for 68.1% of fire departments to maintain their level of minimum staffing (Appendix E #20).

Table 1 illustrates the additional FTEs needed to comply with the minimum-staffing standard of 4 firefighters per engine and the associated costs.

Table 1: Cost of Meeting Minimum Staffing.

Minimum FTEs Needed for suppression division:
1. (5 engines x 4 FTEs p/engine) + 2 FTEs/squad + 1 battalion chief = 23 Total min. FTEs needed/battalion 2. 23 min. FTEs/battalion x 3 battalions = 69 min. FTEs needed for suppression division
Total Annual Benefit Time (hours):
3. (96 Sick + 144 vacation + 96 holiday + 24 education) x 69 min. FTEs needed for suppression division = 24,840 hours total benefit hours
Additional FTEs needed to cover for benefit time:
4. 24,840 hours total benefit time ÷ 2,848 total hours worked/year = 9 Additional FTEs needed to cover for benefit time
Total # FTEs needed to staff fire engines:
5. 9 FTEs needed to cover for benefit time + 69 total min. # FTEs suppression division = 78 total FTEs needed to staff fire engines

Additional FTEs needed to be hired for minimum staffing of four firefighters per engine
6. 78 total FTEs needed to staff fire engines – 48 current FTEs on roster = 30 additional FTEs to be hired
Total annual cost per FTE hired
7. $26,000 salary + $260 unemployment tax +$1,989 social security tax + $260 worker's comp. + $$1,690 retirement + $2,000 health insurance + $300 uniforms + $1,700 personal protective equipment = $34,199 total annual cost per FTE hired
Total cost for LFD to comply with minimum staffing standard for the first year
• $34,199 total annual cost per FTE x 30 additional FTEs = $1,016,460

The additional personnel would not need uniforms and personal protective equipment each year, so the added salary and benefit costs would be $950,460 for each year thereafter, plus cost of living allowances.

On November 15, 2005, the author conducted a telephone interview with Katherine Bates. The author questioned Bates on the position of the NLC concerning minimum staffing standards for fire engines. Bates replied, "The National League of Cities does not support minimum staffing standards by any federal policy. We believe such policies should be established by local governments and their elected officials" (K. Bates, personal communication, November 15, 2005). When asked if the cost factor was the reason the NLC would not support a federal policy promoting a national safety standard to protect the lives of firefighters and citizens, Bates replied, "It's not just a financial issue, local jurisdictions are in a better position to adopt staffing policies that are best for them."

The author's survey illustrated 18 (77.3%) of the 21 comparable fire department respondents chose safety, either for the citizen or the firefighter, as the most beneficial factor of minimum staffing (Appendix E #19).

Another benefit of staffing a minimum of four firefighters on a fire engine is the efficiency and effectiveness of the initial fire attack. Two respondents (9.1%) of the 21 comparable fire

departments felt this was one of the greatest benefits for staffing a minimum of four firefighters per engine company (Appendix E #19).

Another benefit for meeting the standard could be a better ISO Rating. The eighth question on the author's fire department staffing survey asked for the total number of structure fires the department responded to over three specific one-year periods (Appendix E #8a, 8b, & 8c). The purpose of this question was to determine if there was a noticeable decrease or increase in structure fire response over the past 30 years and thus determine if an ISO rating is a viable rationalization for minimum staffing. Although all but two (9.1%) of comparable departments reported for the year 2004, eight (36.4%) did not report for 1994 and nine (40.9%) did not report for 1984.

Discussion

Literature review identified several sources indicating a need for minimum staffing, but there are no requirements unless the jurisdiction has adopted NFPA Standards. OSHA 1910.134 specifically addresses the requirements of employees entering atmospheres that are IDLH, but this regulation does not mean they have to all travel to the scene on the same fire truck. Also it does not prohibit emergency rescue when less than four firefighters are on the scene.

NFPA 1500, 1710, and 1720, as well as the FPH, identify a minimum of four firefighters needed to staff each engine company. The main rationale for these standards is to provide for the safety and effectiveness of the firefighting forces. A lesser number of personnel would be too few to carry out vital operations safely and efficiently.

The trouble with these nationally recognized standards is that they are only suggestions for fire service organizations that have not officially adopted them as policy.

The author concluded that safe practices on the fire ground supercede a quick attack to save property. If at least four people have not assembled in order for an interior attack to commence, the fire ground commander should not allow firefighters to enter the space unless there is an imminent threat to life safety. Most fire departments want to provide a safe, expeditious attack and rescue operation with the first arriving engine. In order to do so, they utilize the OSHA 1910.134 regulation or NFPA Standards as the underlying principles for minimum staffing.

LFD does not meet the NFPA Standards for minimum staffing of fire engines. Bob Hoffman's identifiers of an understaffed workforce parallel problems within LFD. The department has recognized an increase in complaints concerning short staffing. This is substantiated by personnel evaluations where employees indicate, in writing, that they feel overburdened with typical fire ground duties and ordinary daily operations. LFD has experienced a number of employees transferring to other departments within the city, leaving for other career opportunities, or taking early retirement at a reduced benefit. Many have cited working conditions and declining benefits as primary reasons.

Whenever an engine company consisting of two personnel arrives on the scene of a working structure fire, they are overwhelmed from the beginning. They must begin vital fire ground operations that are time consuming and very labor intensive. A consequence of not hiring more employees to staff LFD fire engines might be an increase in property loss to citizens and a greater risk of injury or death to firefighters.

The staffing recommendations from a former fire chief 25 years ago and NIOSH three years ago have gone unfulfilled much like the forewarning from the Gastonia firefighters. Although elected officials state they support staffing fire engines with an appropriate number of personnel to provide a safer working environment for the employee, the need has not been met.

The author's survey results of comparative fire departments and the article "*Roundtable Two-In/Two-Out*" indicated that typically larger municipal departments have the financial resources to staff all engines with a minimum of four personnel all the time. The level of minimum staffing for these departments may also be increased due to the obligation of complying with NFPA 1500 and 1710 or the negotiating power of the union. Literature review did not identify fire departments comparable to the size of LFD that consistently staffed engine companies with four personnel, although the author's survey did reveal that 4 of 22 departments (18.2%) staff a minimum of 4 firefighters per engine, this is the exception more than it is the rule.

Municipal Government in North Carolina suggests municipalities evaluate the fire problem in the community and determine the level of protection needed against the level of protection it can afford. This is much like the high cost of reorganizing Army battalions for needed protection against current and potential terrorism. The author's calculations indicate a high cost for the City of Lumberton to hire the employees necessary to implement minimum staffing. The cost of staffing for potential fires has to be weighed against the cost of potential lost lives and property due to inadequate staffing. Logical practices of commencing interior attacks once an ample number of responders have assembled on the scene, such as Enhanced Task Force Staffing, seems the most practical solution. More property will be lost, but firefighter safety will be observed. The author's survey of elected officials and personal interview with Katherine Bates agrees with this ideology.

The SAFER grant provides $65 million for assistance with staffing. Although LFD submitted a request to the city council to apply for assistance, the council determined the city could not afford the 10% match required. The author failed to survey other fire departments on their desire

to make application for these grant monies. This is a valuable tool for overcoming short staffing for all fire departments.

The O'Hagan and Associates results determined a four-person engine company was the minimum in which an engine company could safely and effectively perform initial fire ground operations. The author's survey supported the benefit of effectiveness and efficiency in staffing a minimum of four firefighters on a fire engine. Currently, LFD could not safely advance the hose line once it was stretched and charged due to the labor intensity of the work. Also, there would not be a pump operator to ensure adequate water supply for extinguishments and protection.

A fire department's ISO Rating could be another justification for minimum staffing. The lack of comparable departments reporting earlier years made it difficult to make the determination if there has been a decline in structure fire response. Survey results from neither comparative departments nor the total respondents indicated the use of their ISO rating as a justification for minimum staffing. The major benefactor of a low ISO rating is industry. A low ISO rating is indicative of lower insurance costs. Keeping insurance premiums to a minimum assists in luring new industry and retaining current industry. It is economically beneficial for fire departments to maintain a low ISO PPC rating.

Flexibility is also a benefit of minimum staffing. When engine companies are not fighting fires, other daily job duties such as public fire education programs, station duties, smoke alarm installations, fire inspections, and training are conducted. Many occasions arise when an employee needs to leave work to attend to urgent family business or an emergency. When these situations arise and there are only two personnel staffing an apparatus, it must be taken out of service. Explaining to a taxpayer why a particular piece of fire equipment did not respond to their emergency can be can be very difficult.

Recommendations

Based on the results of this ARP, it is apparent that LFD administration needs to become more proactive to change its current level of fire engine staffing. Initially, elected officials need to be better informed of staffing needs. Current LFD administration has failed to ensure elected officials and city administrators understand the significance of placing an adequate number of firefighters on the scene of residential structure fires. Change could be implemented through education and creative staffing assignments. This education process will best be served with annual updates to council members during budget workshops. Information provided should include the current and future populations served and property values protected. A report should also be provided indicating firefighter injuries, fatalities, and an estimated value of property lost and saved.

LFD administration needs to redirect its application for the SAFER grant. The results of this ARP indicate that current staffing levels are based on affordability. Fire administration must look to use the SAFER grant in areas of volunteer recruitment and retention for creative staffing. Since LFD is a combination fire department, volunteerism must become a stronger part of the organization. A proactive recruiting effort should be put into place to strengthen the ability to increase the staffing of engine companies during peak times. Data should be collected to determine these times. Funding can be secured to logistically support volunteers with protective equipment, uniforms, and initiatives, such as per call pay and a supplemental retirement benefit. Besides the previously mentioned benefits of increased staffing, an opportunity for city employees to work along side its citizenry is a benefit that can be expected from implementing these changes. It would be valuable for citizens to observe how their local government provides

services on a daily basis and it would be helpful for career firefighters to see that volunteerism is not dead in today's society. The SAFER grant will assist with these transformations.

The closing of one fire station and reassigning personnel to other stations would not allow the department to meet minimum staffing levels on all engines, but it would allow a 25% increase on the two remaining substation engines. There would be political resistance to this change, but directional growth of the city, previous call volume, and estimated future call volumes will not support a need to maintain this fire station.

Follow-up evaluation should include annual reviews of personnel injuries related to typical fire ground operations. Increased staffing should eliminate the majority of sprains, strains, heat related injuries, and other injuries due to fatigue from over exertion on the fire ground. It would also be necessary to maintain accurate numbers on property evaluation and economic development. These numbers will be important during annual budget updates with council members.

In conclusion, recommendations for future research include polling offices of the State Fire Marshal for specific information related to minimum staffing in individual states. Sorting through individual state legislation can be very time consuming.

Future researchers might also survey comparable size fire departments on their total number of personnel, types of divisions, and number of fire stations. This information allows for a closer comparison of actual staffing levels between departments and may give the researcher some additional information for creative staffing ideas. It may also be conducive for some departments to operate with fewer personnel if stations are closed due to seasonal or time of day activities in their particular jurisdictions. A random survey that does not question specifics may not reveal them.

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Appendix A

Employee Evaluation Questionnaire

PERFORMANCE EVALUATION AND COUNSELING FORM

SECTION FOR EMPLOYEE (SUPPRESSION)

Name _____

Battalion _____

1. Which of you job duties require the most time and why?_____
   _____
   _____
   _____
2. What basic skills do you possesses that enable you to handle your job duties?_____
   _____
   _____
   _____
3. What type of training and/or assistance could the City provide to enhance your performance and add to your job satisfaction?_____
   _____
   _____
   _____
4. What can the City do to help you better perform your job duties? _____
   _____
   _____
   _____
5. List any changes that you feel would be beneficial to the City and to its employee in your department/division operations._____
   _____
   _____
   _____
6. What are your career objectives?_____
   _____
   _____
   _____

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This Document is subject to the provisions of N.C. General Statue 160A-168 and, therefore, is confidential and subject to inspection only in limited instances.

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Appendix B
Staffing Survey (Fire Departments)

Mike Cox, Fire Chief
Lumberton Fire Department
Lumberton, NC 28358

October 24, 2005

To Whom It May Concern:

The attached is a survey designed to collect data concerning minimum staffing of fire engines from fire departments across the nation. The information requested is essential to obtain a fair comparison between departments that provide service to a specific population. This research is very important to the fire service and I appreciate your willingness to help. I would also appreciate the survey's return by November 15, 2005.

There are 20 survey questions. Sixteen are selections chosen by clicking a box beside the most appropriate answer and four questions are short answer. **Question 8** requests the number of structure fires responded to by your department from three specific periods of time. This information is very important to my overall survey. I will be glad to share the results of this survey with all respondents, while ensuring confidentiality and anonymity.

Instructions: (These instructions are for those not familiar with opening, manipulating, saving, and returning email attachments.)

To Open:
Place your cursor on the file name "EFO ARP Staffing Survey – Oct 2005" beside "Attachment". Double click to open the file. At some point you will need to "save" it. You may open the file, start the survey and "save" at the end or you may save the file before you begin the survey and also click "save" at the completion of the survey. Please "save" the file as "EFO ARP Staffing Survey – Oct 2005".

To Complete the Survey:

- **Dropdown box**– place your cursor on the box, click on the box to open, place your cursor over the most appropriate answer, click on the answer. Go to the next question.
- **Check box** ☒– place your cursor over the check box, click on the box to select. To remove your answer, click on the box again. Instructions will indicate when to select as many boxes as necessary.
- **Short answer** - place your cursor over the grey box and click to select. Type your short answer in the grey box area.

To return:

- At anytime during the survey Click "File" and select "Save As …" Save file as "EFO ARP-Staffing Survey".
- Click "Reply" on the original email I sent to you. Click "Insert" from the toolbar. Select "File". Locate the file "EFO ARP Staffing Survey - 2005"

- Select "Open" or double click the "EFO ARP Staffing Survey - 2005" file. The file will be sent to your "Reply" email as an attachment.
- Select "Send".

1. Is your fire service organization

   a. Career ☐ b. Volunteer ☐ c. Combination ☐

2. In what State is your fire service organization located?

3. What is the population of your jurisdiction?

   a. < 10,000 ☐
   b. 10,000 – 17,999 ☐
   c. 18,000 – 29,999 ☐
   d. 30,000 – 49,999 ☐
   e. 50,000 – 74,999 ☐
   f. 75,000 – 99,999 ☐
   g. > 100,000 ☐

4. Is your fire service organization governed by

   a. municipal administration (city/town manager, city council, Mayor) ☐
   b. County administration (county manager, commissioners) ☐
   c. Fire District (President, board of directors, board members) ☐
   d. Other (please explain) ☐

5. Does your fire service organization negotiate with a Union?

   a. Yes ☐
   b. No ☐

6. What is your fire service organization's annual operating budget for fire suppression salaries and benefits? (<u>Do not include salaries for prevention/education, code enforcement, EMS, etc., if they are separate divisions that do not perform fire suppression. If they perform fire suppression, include them</u>.)

   a. < $1,000,000 ☐
   b. $1,000,000 – $1,999,999 ☐
   c. $2,000,000 - $2,999,999 ☐
   d. $3,000,000 - $4,999,999 ☐

e. > $5,000,000 ☐

7. What percentage of your fire service organization's annual "fire suppression" budget for salaries and benefits is spent on overtime payment to maintain minimum staffing? (The same criteria as for #6 applies.)
   a. 1-5% ☐
   b. 6-10% ☐
   c. 11-15% ☐
   d. 16-20% ☐
   e. 21-25% ☐
   f. > 25% ☐
8. To how many structure fires did your fire service organization respond, during the following periods of time? Structure fires are defined as any fires within a structure. (Please answer as many as possible)
   a. January – December 2004
   b. January – December 1994
   c. January – December 1984
9. How many engine companies (pumpers) are dispatched on the initial alarm of a single-family, residential structure?
   a. 1 ☐
   b. 2 ☐
   c. 3 ☐
   d. 4 ☐
   e. > 4 ☐
10. What is your fire service organization's minimum number of personnel staffing on a single fire engine (pumper)?
    a. 1 ☐
    b. 2 ☐
    c. 3 ☐
    d. >4 ☐

11. Does your fire service organization respond a ladder company to the initial dispatch of a single-family, residential structure?
    a. Yes ☐
    b. No ☐
12. If yes to #11, what is the minimum staffing of personnel on a single ladder truck? If no to #11, please mark (f).
    a. 1 ☐
    b. 2 ☐
    c. 3 ☐
    d. 4 ☐
    e. >5 ☐
    f. N/A ☐
13. Does your department operate other apparatus (squad, transport ambulance, battalion commander, staff vehicle, etc.) used to transport additional firefighting personnel to the scene of a single-family, residential structure **on the initial dispatch**?

    (For the purpose of this survey, a "Squad" is an apparatus used to transport additional personnel to the scene of a structure fire. The squad may be used for a number of daily operational duties, but for this survey its personnel are used to supplement staffing on a fire scene.)

    a. Yes ☐
    b. No ☐
    c. Sometimes (Please explain) ☐
14. Has your fire service organization officially adopted all National Fire Protection Association (NFPA) standards?
    a. Yes ☐
    b. No ☐
15. Does your fire service organization recognize the Occupational Safety and Health Administration (OSHA) Code of Federal Regulations (CFR) as law? (Some volunteer departments may not.)
    a. Yes ☐
    b. No ☐

16. What rationale (national, state, or local standards) does your fire service organization use to determine minimum staffing of engine companies? (**click all that apply**)
    a. NFPA 1500 ☐
    b. NFPA 1710 ☐
    c. NFPA 1720 ☐
    d. OSHA 1910.146 ☐
    e. Other (Please explain) ☐
17. Do you feel the governing body of your fire service organization is educated on minimum staffing, concerning engine companies and fire ground safety?
    a. Yes ☐
    b. No ☐
    c. Somewhat educated ☐
18. In your opinion, what do you feel is the safest and most cost effective minimum number of firefighters needed to staff a first out Engine Company responding to a single-family residential structure fire?
    a. 2 ☐
    b. 3 ☐
    c. 4 ☐
    d. > 4 ☐
19. In your opinion, what are the greatest benefits of meeting a requirement for minimum staffing of first out Engine Companies responding to a single-family residential structure fire? (Please list as many as you wish.)

20. In your opinion, what are the greatest difficulties of meeting a requirement for minimum staffing of first out Engine Companies responding to a single-family residential structure fire? (Please list as many as you wish.)

Appendix C

Staffing Survey (Elected Official)

Mike Cox, Fire Chief
Lumberton Fire Department
Lumberton, NC 28358

November 1, 2005

To Whom It May Concern:

The attached is a survey designed to collect data concerning an elected official's position concerning minimum staffing of fire engines from fire departments across the nation. The information requested is essential to obtain a fair comparison between departments that provide service to a specific population. This research is very important to the fire service and I appreciate your willingness to help. I would also appreciate the survey's return by November 20, 2005.

There are 11 survey questions. Nine are selections chosen by clicking a box beside the most appropriate answer and two questions are short answer. I will be glad to share the results of this survey with all respondents, while ensuring confidentiality and anonymity.

Instructions: (These instructions are for those not familiar with opening, manipulating, saving, and returning email attachments.)

To Open:

Place your cursor on the file name "EFO ARP Staffing EO Survey – Nov 2005" beside "Attachment". Double click to open the file. At some point you will need to "save" it. You may open the file, start the survey and "save" at the end or you may save the file before you begin the survey and also click "save" at the completion of the survey. Please "save" the file as "EFO ARP Staffing EO Survey – Nov 2005"

To Complete the Survey:

- **Dropdown box**– place your cursor on the box, click on the box to open, place your cursor over the most appropriate answer, click on the answer. Go to the next question.
- **Check box** ☒– place your cursor over the check box, click on the box to select. To remove your answer, click on the box again. Instructions will indicate when to select as many boxes as necessary.
- **Short answer** - place your cursor over the grey box and click to select. Type your short answer in the grey box area.

To return:

- At anytime during the survey Click "File" and select "Save As …" Save file as "EFO ARP Staffing EO Survey – Nov 2005"
- Click "Reply" on the original email I sent to you. Click "Insert" from the toolbar. Select "File". Locate the file "EFO ARP Staffing EO Survey – Nov 2005"

- Select "Open" or double click the "EFO ARP Staffing EO Survey – Nov 2005" file. The file will be sent to your "Reply" email as an attachment.
- Select "Send".

1. Is your fire service organization
   a. Career ☐ b. Volunteer ☐ c. Combination ☐
2. In what State is your fire service organization located?

3. What is the population of your jurisdiction?
   a. < 10,000 ☐
   b. 10,000 – 17,999 ☐
   c. 18,000 – 29,999 ☐
   d. 30,000 – 49,999 ☐
   e. 50,000 – 74,999 ☐
   f. 75,000 – 99,999 ☐
   g. > 100,000 ☐
4. Is your fire service organization governed by
   a. municipal administration (city/town manager, city council, Mayor) ☐
   b. County administration (county manager, commissioners) ☐
   c. Fire District (President, board of directors, board members) ☐
   d. Other (please explain) ☐

5. Does your fire service organization negotiate with a Union?
   a. Yes ☐
   b. No ☐
6. What is your fire service organization's minimum number of personnel staffing on a single fire engine (pumper)?
   a. 1 ☐
   b. 2 ☐
   c. 3 ☐
   d. >4 ☐
   e. Unsure ☐

7. Does your fire service organization recognize the Occupational Safety and Health Administration (OSHA) Code of Federal Regulations (CFR) as law? (Some volunteer departments may not.)
    a. Yes ☐
    b. No ☐
    c. Unsure ☐
8. Do you feel the governing body (elected officials) is educated on minimum staffing, concerning engine companies and fire ground safety?
    a. Yes ☐
    b. No ☐
    c. Somewhat educated ☐
9. In your opinion, what do you feel is the safest and most cost effective minimum number of firefighters needed to staff a first out Engine Company responding to a single-family residential structure fire?
    a. 1 ☐
    b. 2 ☐
    c. 3 ☐
    d. 4 ☐
    e. > 4 ☐
    f. Unsure ☐

10. In your opinion, what are the greatest benefits of meeting a requirement for minimum staffing of first out Engine Companies responding to a single-family residential structure fire? (Please list as many as you wish.)

11. In your opinion, what are the greatest difficulties of meeting a requirement for minimum staffing of first out Engine Companies responding to a single-family residential structure fire? (Please list as many as you wish.)

Appendix D

Katherine Bate's (NLC) Questions

1. What is the position of the National League of Cities (NLC) on the minimum staffing of fire engines?

"The National League of Cities does not support minimum staffing standards by any federal policy. We believe such policies should be established by local governments and their elected officials" (K. Bates, personal communication, November 15, 2005).

2. Is the cost factor the reason the NLC will not support a federal policy that promotes a national safety standard to protect the lives of firefighters and citizens?

"It's not just a financial issue, local jurisdictions are in a better position to adopt staffing policies that are best for them" (K. Bates, personal communication, November 15, 2005).

Appendix E

Survey Results (Comparative Fire Departments)

1. Type of Fire Department

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Career	10	45.5	45.5	45.5
	Volunteer	1	4.5	4.5	50.0
	Combination	10	45.5	45.5	95.5
	LFD (Combination)	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

2. Name of State or Location

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	FL	1	4.5	4.5	4.5
	IL	1	4.5	4.5	9.1
	NC	9	40.9	40.9	50.0
	NE	1	4.5	4.5	54.5
	OH	1	4.5	4.5	59.1
	TX	7	31.8	31.8	90.9
	WV	1	4.5	4.5	95.5
	LFD (NC)	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

3. Population of Jurisdiction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	LFD (18,000-29,999)	1	4.5	4.5	4.5
	18,000 - 29,999	21	95.5	95.5	100.0
	Total	22	100.0	100.0	

4. Fire Service Organization Governed by

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Municipal	12	54.5	54.5	54.5
	County	1	4.5	4.5	59.1
	Fire District	5	22.7	22.7	81.8
	Other	3	13.6	13.6	95.5
	LFD (Municipal)	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

5. Does your fire service organization negotiate with a union?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	4	18.2	18.2	18.2

	No	17	77.3	77.3	95.5
	LFD (No)	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

6. Organization's annual operating budget for fire suppression salaries and benefits.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	< 1,000,000	7	31.8	31.8	31.8
	$1,000,000-$1,999,999	2	9.1	9.1	40.9
	$2,000,000-$2,999,999	7	31.8	31.8	72.7
	$3,000,000-$4,999,999	5	22.7	22.7	95.5
	LFD ($2,000,000-$2,999,999)	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

7. Percent of operating budget used for overtime to maintain minimum staffing.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-5%	12	54.5	54.5	54.5
	6-10%	4	18.2	18.2	72.7
	16-20%	1	4.5	4.5	77.3
	> 25%	4	18.2	18.2	95.5
	LFD (1-5%)	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

8 (a). Number of structure fires - 2004

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-50	9	40.9	40.9	40.9
	51-100	4	18.2	18.2	59.1
	101-150	2	9.1	9.1	68.2
	151-300	1	4.5	4.5	72.7
	> 300	3	13.6	13.6	86.4
	not reported	2	9.1	9.1	95.5
	LFD (51-100)	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

8 (b). Number of structure fires - 1994

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-50	5	22.7	22.7	22.7
	51-100	5	22.7	22.7	45.5
	151-300	1	4.5	4.5	50.0
	> 300	2	9.1	9.1	59.1
	not reported	8	36.4	36.4	95.5
	LFD (51-100)	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

8 (c). Number of structure fires - 1984

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-50	8	36.4	36.4	36.4
	51-100	1	4.5	4.5	40.9
	101-150	1	4.5	4.5	45.5
	> 300	2	9.1	9.1	54.5
	not reported	9	40.9	40.9	95.5
	LFD (51-100)	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

9. How many engine companies are dispatched on the initial alarm of a single family, residential structure?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	4.5	4.5	4.5
	2	8	36.4	36.4	40.9
	3	6	27.3	27.3	68.2
	4	6	27.3	27.3	95.5
	LFD (3)	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

10. What is the minimum number of personnel staffing on a single fire engine?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	4.5	4.5	4.5
	2	4	18.2	18.2	22.7
	3	12	54.5	54.5	77.3
	4	4	18.2	18.2	95.5
	LFD (2)	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

11. Does your fire service organization respond a ladder company to the initial dispatch of a single-family, residential structure fire?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	7	31.8	31.8	31.8
	No	14	63.6	63.6	95.5
	LFD (Yes)	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

12. What is the minimum staffing of personnel on a single ladder truck?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	4.5	4.5	4.5
	2	1	4.5	4.5	9.1
	3	5	22.7	22.7	31.8
	>5	1	4.5	4.5	36.4
	N/A	13	59.1	59.1	95.5
	LFD (2)	1	4.5	4.5	100.0

	Total	22	100.0	100.0	

13. Does your department operate other apparatus (squads, transport ambulance, battalion commander, staff vehicle, etc.) used to transport additional firefighting personnel to the scene of a single-family, residential structure fire on the initial dispatch?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	14	63.6	63.6	63.6
	No	6	27.3	27.3	90.9
	Sometimes	1	4.5	4.5	95.5
	LFD (Yes)	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

14. Has your fire service organization officially adopted all NFPA standards?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		1	4.5	4.5	4.5
	Yes	4	18.2	18.2	22.7
	No	16	72.7	72.7	95.5
	LFD (No)	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

15. Does your fire service organization recognize OSHA CFR as law?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	14	63.6	63.6	63.6
	No	7	31.8	31.8	95.5
	LFD (Yes)	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

16. What rationale does your fire service use to determine minimum staffing?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		1	4.5	4.5	4.5
	1500	1	4.5	4.5	9.1
	1710	1	4.5	4.5	13.6
	1720	2	9.1	9.1	22.7
	1910.146	2	9.1	9.1	31.8
	Union	1	4.5	4.5	36.4
	1500;1710;1720; 1910.146	1	4.5	4.5	40.9
	1710;1720	2	9.1	9.1	50.0
	Budget Restraints	6	27.3	27.3	77.3
	1500;1710;1910. 146	2	9.1	9.1	86.4
	1500;1910.146	1	4.5	4.5	90.9
	City Policy	1	4.5	4.5	95.5
	LFD (Budget Restraints)	1	4.5	4.5	100.0

	Total	22	100.0	100.0	

17. Do you feel the governing body of your fire service organization is educated on minimum staffing, concerning engine companies and fire ground safety?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	5	22.7	22.7	22.7
	No	3	13.6	13.6	36.4
	Somewhat educated	13	59.1	59.1	95.5
	LFD (Somewhat educated)	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

18. In your opinion, what do you feel is the safest and most cost effective minimum number of firefighters needed to staff a first out engine company responding to a single-family, residential structure fire?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	4.5	4.5	4.5
	3	7	31.8	31.8	36.4
	4	9	40.9	40.9	77.3
	>4	4	18.2	18.2	95.5
	LFD (4)	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

19. Greatest benefits for minimum staffing requirements.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Safety;2in/2out; & citizen safety	17	77.3	77.3	77.3
	Efficient Effective; quick attack	2	9.1	9.1	86.4
	OSHA compliance	1	4.5	4.5	90.9
	Flexibility	1	4.5	4.5	95.5
	LFD (Safety)	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

20. Greatest difficulties of meeting a requirement for minimum staffing?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	LFD (Cost)	1	4.5	4.5	4.5
	Cost	14	63.6	63.6	68.2
	Volunteer shortage	3	13.6	13.6	81.8
	Local Officials	2	9.1	9.1	90.9
	None	1	4.5	4.5	95.5
	Other	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

Appendix F

Survey Results (Overall Fire Departments)

1. Type of Fire Department

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Career	57	45.2	45.2	45.2
	Volunteer	12	9.5	9.5	54.8
	Combination	56	44.4	44.4	99.2
	LFD (Combination)	1	.8	.8	100.0
	Total	126	100.0	100.0	

2. Name of State or Location

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	AK	1	.8	.8	.8
	AL	1	.8	.8	1.6
	CA	4	3.2	3.2	4.8
	FL	5	4.0	4.0	8.7
	IL	1	.8	.8	9.5
	KS	1	.8	.8	10.3
	LA	1	.8	.8	11.1
	MA	1	.8	.8	11.9
	MN	1	.8	.8	12.7
	NC	56	44.4	44.4	57.1
	LFD (NC)	1	.8	.8	57.9
	NE	2	1.6	1.6	59.5
	New Zealand	1	.8	.8	60.3
	OH	1	.8	.8	61.1
	RI	1	.8	.8	61.9
	SC	2	1.6	1.6	63.5
	TN	1	.8	.8	64.3
	TX	37	29.4	29.4	93.7
	VA	1	.8	.8	94.4
	WA	4	3.2	3.2	97.6
	WI	1	.8	.8	98.4
	WV	1	.8	.8	99.2
	AZ	1	.8	.8	100.0
	Total	126	100.0	100.0	

3. Population of Jurisdiction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	< 10,000	26	20.6	20.6	20.6
	10,000 - 17,999	20	15.9	15.9	36.5
	18,000 - 29,999	21	16.7	16.7	53.2
	30,000 - 49,999	16	12.7	12.7	65.9
	50,000 - 74,999	15	11.9	11.9	77.8
	75,000 - 99,999	7	5.6	5.6	83.3

	> 100,000	20	15.9	15.9	99.2
	LFD (18,000-29,999)	1	.8	.8	100.0
	Total	126	100.0	100.0	

4. Fire Service Organization Governed by

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Municipal	85	67.5	67.5	67.5
	LFD (Municipal)	1	.8	.8	68.3
	County	7	5.6	5.6	73.8
	Fire District	26	20.6	20.6	94.4
	Other	7	5.6	5.6	100.0
	Total	126	100.0	100.0	

5. Does your organization negotiate with a union?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	23	18.3	18.3	18.3
	No	102	81.0	81.0	99.2
	LFD (No)	1	.8	.8	100.0
	Total	126	100.0	100.0	

6. Organization's annual operating budget for fire suppression salaries and benefits.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	< $1,000,000	40	31.7	32.0	32.0
	$1,000,000 - $1,999,999	15	11.9	12.0	44.0
	$2,000,000 - $2,999,999	10	7.9	8.0	52.0
	$3,000,000 - $4,999,999	25	19.8	20.0	72.0
	> $5,000,000	34	27.0	27.2	99.2
	LFD ($2,000,000-$2,999,999)	1	.8	.8	100.0
	Total	125	99.2	100.0	
Missing	System	1	.8		
Total		126	100.0		

7. Percent of fire suppression budget used for overtime to maintain minimum staffing.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-5%	67	53.2	54.5	54.5
	6-10%	24	19.0	19.5	74.0
	11-15%	12	9.5	9.8	83.7
	16-20%	6	4.8	4.9	88.6
	21-25%	3	2.4	2.4	91.1
	> 25%	10	7.9	8.1	99.2
	LFD (1-5%)	1	.8	.8	100.0
	Total	123	97.6	100.0	
Missing	System	3	2.4		
Total		126	100.0		

8 (a). Number of structure fires - 2004

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-50	44	34.9	34.9	34.9
	51-100	23	18.3	18.3	53.2
	101-150	10	7.9	7.9	61.1
	151-300	9	7.1	7.1	68.3
	> 300	27	21.4	21.4	89.7
	Not Reported	12	9.5	9.5	99.2
	LFD (51-100)	1	.8	.8	100.0
	Total	126	100.0	100.0	

8 (b). Number of structure fires - 1994

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-50	30	23.8	23.8	23.8
	51-100	17	13.5	13.5	37.3
	101-150	5	4.0	4.0	41.3
	151-300	6	4.8	4.8	46.0
	> 300	14	11.1	11.1	57.1
	Not Reported	53	42.1	42.1	99.2
	LFD (51-100)	1	.8	.8	100.0
	Total	126	100.0	100.0	

8 (c). Number of Structure fires - 1984

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-50	23	18.3	18.3	18.3
	51-100	9	7.1	7.1	25.4
	101-150	5	4.0	4.0	29.4
	151-300	2	1.6	1.6	31.0
	> 300	10	7.9	7.9	38.9
	Not Reported	76	60.3	60.3	99.2
	LFD (51-100)	1	.8	.8	100.0
	Total	126	100.0	100.0	

9. How many engine companies are dispatched on the initial alarm of a single family, residential structure?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	10	7.9	8.0	8.0
	2	60	47.6	48.0	56.0
	3	41	32.5	32.8	88.8
	4	13	10.3	10.4	99.2
	LFD (3)	1	.8	.8	100.0
	Total	125	99.2	100.0	
Missing	System	1	.8		
Total		126	100.0		

10. What is the minimum number of personnel staffing on a single fire engine?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	12	9.5	9.5	9.5

	2	27	21.4	21.4	31.0
	3	55	43.7	43.7	74.6
	>4	31	24.6	24.6	99.2
	LFD (2)	1	.8	.8	100.0
	Total	126	100.0	100.0	

11. Does your fire service organization respond a ladder company to the initial dispatch of a single-family, residential structure?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	LFD (Yes)	1	.8	.8	.8
	Yes	77	61.1	61.1	61.9
	No	48	38.1	38.1	100.0
	Total	126	100.0	100.0	

12. What is the minimum staffing of personnel on a single ladder truck?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	11	8.7	8.7	8.7
	2	17	13.5	13.5	22.2
	3	36	28.6	28.6	50.8
	4	11	8.7	8.7	59.5
	>5	2	1.6	1.6	61.1
	N/A	48	38.1	38.1	99.2
	LFD (2)	1	.8	.8	100.0
	Total	126	100.0	100.0	

13. Does your department operate other apparatus (squads, transport ambulance, battalion commander, staff vehicle, etc.) used to transport additional firefighting personnel to the scene of a single-family, residential structure on the initial dispatch?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	LFD (Yes)	1	.8	.8	.8
	Yes	87	69.0	69.0	69.8
	No	32	25.4	25.4	95.2
	Sometimes	6	4.8	4.8	100.0
	Total	126	100.0	100.0	

14. Has your fire service organization officially adopted all NFPA standards?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		1	.8	.8	.8
	Yes	22	17.5	17.5	18.3
	No	102	81.0	81.0	99.2
	LFD (No)	1	.8	.8	100.0
	Total	126	100.0	100.0	

15. Does your fire service organization recognize OSHA CFR as law?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		1	.8	.8	.8
	LFD (Yes)	1	.8	.8	1.6

	Yes	84	66.7	66.7	68.3
	No	40	31.7	31.7	100.0
	Total	126	100.0	100.0	

16. What rationale does your fire service use to determine minimum staffing?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		3	2.4	2.4	2.4
	NFPA 1500	3	2.4	2.4	4.8
	NFPA 1710, OSHA 1910.146	1	.8	.8	5.6
	NFPA 1500, 1720, OSHA 1910.146	4	3.2	3.2	8.7
	NFPA 1500, `1710, OSHA 1910.146	10	7.9	7.9	16.7
	NFPA 1500, OSHA 1910.146	7	5.6	5.6	22.2
	NFPA 1710, 1720, OSHA 1910.146	2	1.6	1.6	23.8
	LFD (Budget Restraints)	1	.8	.8	24.6
	Budget Restraints	25	19.8	19.8	44.4
	Union	4	3.2	3.2	47.6
	Enhanced Task Force Staffing (Texas)	6	4.8	4.8	52.4
	None	3	2.4	2.4	54.8
	NFPA 1710	8	6.3	6.3	61.1
	NFPA 1720	4	3.2	3.2	64.3
	OSHA 1910.146	7	5.6	5.6	69.8
	NFPA 1500, 1710, 1720, OSHA 1910.146	22	17.5	17.5	87.3
	NFPA 1500, 1710, 1720	7	5.6	5.6	92.9
	NFPA 1710, OSHA 1910.146	3	2.4	2.4	95.2
	NFPA 1720, OSHA 1910.146	2	1.6	1.6	96.8
	Other	4	3.2	3.2	100.0
	Total	126	100.0	100.0	

17. Do you feel the governing body of your fire service organization is educated on minimum staffing, concerning engine companies and fire ground safety?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	42	33.3	33.3	33.3
	No	21	16.7	16.7	50.0

	Somewhat educated	62	49.2	49.2	99.2
	LFD (Somewhat educated)	1	.8	.8	100.0
	Total	126	100.0	100.0	

18. In your opinion, what do you feel is the safest and most cost effective minimum number of firefighters needed to staff a first out engine company responding to a single-family residential structure fire?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	2	1.6	1.6	1.6
	3	23	18.3	18.3	19.8
	4	86	68.3	68.3	88.1
	> 4	14	11.1	11.1	99.2
	LFD (4)	1	.8	.8	100.0
	Total	126	100.0	100.0	

19. Greatest benefits for minimum staffing requirements.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		2	1.6	1.6	1.6
	LFD (Safety)	1	.8	.8	2.4
	Safety - 2in/2out & Citizen	95	75.4	75.4	77.8
	Efficient/Effective - quick attack	23	18.3	18.3	96.0
	OSHA Compliance	2	1.6	1.6	97.6
	Flexibility	1	.8	.8	98.4
	Staffing	1	.8	.8	99.2
	Liability	1	.8	.8	100.0
	Total	126	100.0	100.0	

20. Greatest difficulties of meeting a requirement for minimum staffing.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		7	5.6	5.6	5.6
	LFD (Cost)	1	.8	.8	6.3
	Cost	89	70.6	70.6	77.0
	Volunteer Shortage	12	9.5	9.5	86.5
	Local Officials	6	4.8	4.8	91.3
	Justification Due to Low Call Volume	3	2.4	2.4	93.7
	Training	2	1.6	1.6	95.2
	Union	1	.8	.8	96.0
	Qualified Personnel Shortage	5	4.0	4.0	100.0
	Total	126	100.0	100.0	

Appendix G

Survey Results (Elected Officials)

1. Type of Fire Department

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Career	27	77.1	77.1	77.1
	Volunteer	2	5.7	5.7	82.9
	Combination	6	17.1	17.1	100.0
	Total	35	100.0	100.0	

2. Name of State or Location

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	AL	1	2.9	2.9	2.9
	AZ	4	11.4	11.4	14.3
	CA	5	14.3	14.3	28.6
	CO	1	2.9	2.9	31.4
	FL	3	8.6	8.6	40.0
	GA	2	5.7	5.7	45.7
	IL	3	8.6	8.6	54.3
	KS	1	2.9	2.9	57.1
	MA	1	2.9	2.9	60.0
	MD	1	2.9	2.9	62.9
	MN	1	2.9	2.9	65.7
	MO	1	2.9	2.9	68.6
	NC	4	11.4	11.4	80.0
	ND	1	2.9	2.9	82.9
	NV	1	2.9	2.9	85.7
	OK	1	2.9	2.9	88.6
	TN	1	2.9	2.9	91.4
	TX	1	2.9	2.9	94.3
	WA	1	2.9	2.9	97.1
	WY	1	2.9	2.9	100.0
	Total	35	100.0	100.0	

3. Population of Jurisdiction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	< 10,000	3	8.6	8.6	8.6
	10,000-17,999	2	5.7	5.7	14.3
	18,000-29,999	7	20.0	20.0	34.3
	30,000-49,999	5	14.3	14.3	48.6
	50,000-74,999	5	14.3	14.3	62.9
	75,000-99,999	2	5.7	5.7	68.6
	>100,000	11	31.4	31.4	100.0
	Total	35	100.0	100.0	

Fire 4. Service Organization Governed by

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Municipal Administration (city/town manager, city council,	26	74.3	74.3	74.3
	County Administration (county manager, commissioners)	3	8.6	8.6	82.9
	Fire District (President, board of directors, board members)	5	14.3	14.3	97.1
	Municipal, County, & Fire District	1	2.9	2.9	100.0
	Total	35	100.0	100.0	

5. Does your organization negotiate with a union?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	19	54.3	54.3	54.3
	No	14	40.0	40.0	94.3
	Unsure	2	5.7	5.7	100.0
	Total	35	100.0	100.0	

6. What is your fire service's minimum number of staffing on a single fire engine (pumper)?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	2.9	2.9	2.9
	2	1	2.9	2.9	5.7
	3	10	28.6	28.6	34.3
	Over 4	14	40.0	40.0	74.3
	Unsure	9	25.7	25.7	100.0
	Total	35	100.0	100.0	

7. Does your fire service organization recognize the Occupational Safety and Health Administration (OSHA) Code of Federal Regulations (CFR) as law? (Some volunteer departments may not.)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	30	85.7	85.7	85.7
	No	1	2.9	2.9	88.6
	Unsure	4	11.4	11.4	100.0
	Total	35	100.0	100.0	

8. Do you feel the governing body (elected officials) is educated on minimum staffing, concerning engine companies and fire ground safety?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	20	57.1	57.1	57.1
	No	4	11.4	11.4	68.6
	Somewhat educated	11	31.4	31.4	100.0
	Total	35	100.0	100.0	

9. In your opinion, what do you feel is the safest and most cost effective minimum number of firefighters needed to staff a first out engine company responding to a single-family residential structure fire?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		1	2.9	2.9	2.9
	1	1	2.9	2.9	5.7
	2	1	2.9	2.9	8.6
	3	9	25.7	25.7	34.3
	4	9	25.7	25.7	60.0
	>4	8	22.9	22.9	82.9
	Unsure	6	17.1	17.1	100.0
	Total	35	100.0	100.0	

10. In your opinion, what are the greatest benefits of meeting a requirement for minimum staffing of first out engine companies?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		16	45.7	45.7	45.7
	None	1	2.9	2.9	48.6
	Safety	10	28.6	28.6	77.1
	Efficient/Effective	7	20.0	20.0	97.1
	Unsure	1	2.9	2.9	100.0
	Total	35	100.0	100.0	

11. In your opinion, what are the greatest difficulties of meeting a requirement for minimum staffing of first out engine companies?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		15	42.9	42.9	42.9
	None	1	2.9	2.9	45.7
	Cost	15	42.9	42.9	88.6
	Training	2	5.7	5.7	94.3
	Other	1	2.9	2.9	97.1
	Restricts Flexibility	1	2.9	2.9	100.0
	Total	35	100.0	100.0	

12. Please rate municipal FIRE service in its order of importance.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	19	54.3	57.6	57.6
	2	8	22.9	24.2	81.8
	3	3	8.6	9.1	90.9
	4	1	2.9	3.0	93.9

	5	1	2.9	3.0	97.0
	6	1	2.9	3.0	100.0
	Total	33	94.3	100.0	
Missing	System	2	5.7		
Total		35	100.0		

13. List the three budgeting methods you consider the most appropriate for financing capital items (personnel, equipment, & vehicles.)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		3	8.6	8.6	8.6
	Property Tax	21	60.0	60.0	68.6
	Sales Tax	4	11.4	11.4	80.0
	User Fee	1	2.9	2.9	82.9
	Fire District Fees	3	8.6	8.6	91.4
	Grants	1	2.9	2.9	94.3
	Lease Purchase (equipt & vehicles)	1	2.9	2.9	97.1
	Income Tax - added by Texas	1	2.9	2.9	100.0
	Total	35	100.0	100.0	